UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/837,503	04/18/2001	Vincent M. Callaghan	01-104	8044

7590 04/09/2008

Gregory P. LaPointe
BACHMAN & LaPOINTE, P.C.
Suite 1201
900 Chapel Street
New Haven, CT 06510-2802

EXAMINER	
LEUNG, JENNIFER A	
ART UNIT	PAPER NUMBER
1797	

MAIL DATE	DELIVERY MODE
04/09/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/837,503	CALLAGHAN ET AL.	
	Examiner	Art Unit	
	JENNIFER A. LEUNG	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 January 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2,5-11,17 and 18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2,5-11,17 and 18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of the Claims

1. Applicant's amendment filed on January 22, 2008 has been received and considered. Claims 1, 3, 4 and 12-16 are cancelled. Claims 2, 5-11, 17 and 18 are under consideration.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al. (US 6,458,478) in view of Fanciullo (US 4,046,956).

Wang et al. (see FIGs. 1, 2 and 5; generally, column 4, line 33 to column 6, line 60; column 7, line 25 to column 8, line 59) discloses a fuel cell system comprising:

a fuel processor (i.e., reformer **10**) for converting a hydrocarbon fuel **1** into a reformed gas containing hydrogen, carbon dioxide and carbon monoxide;

first conduit means for communicating the reformed gas to a shift converter (i.e., a high

temperature shift reactor **20**) located downstream of the fuel processor **10** for further converting the reformed gas to a hydrogen and carbon dioxide containing gas stream;

second conduit means for communicating the gas stream to a fuel cell **50** downstream of the shift converter **20** for reacting the hydrogen in the gas stream;

a source of liquid phase water (i.e., water **200**, from the condensate of fuel cell **50**); and

water feed means (i.e., pumps **96**, **98**; see FIG. 5; column 7, lines 42-50) for feeding liquid phase water from the source **200** to the first and second conduit means in a controlled manner.

The apparatus of Wang et al. is the same as the instantly claimed apparatus, except that Wang et al. is silent as to the apparatus further comprising at least one selective oxidizer, between the shift converter **20** and the fuel cell **50**, and located downstream of where the water feed means **96**,**98** feeds water to the second conduit means.

Fanciullo (FIG. 1) teaches a fuel cell system comprising a fuel processor (i.e., reformer **17**), a shift converter **28** and a fuel cell **10**. Fanciullo further teaches at least one selective oxidizer **32**, provided between the shift converter **28** and the fuel cell **10**. In the "Description of the Prior Art", Fanciullo evidences that the above stated elements as well as their particular arrangement is conventional to fuel cell systems (see column 1, lines 10-35).

It would have been obvious for one of ordinary skill in the art at the time the invention was made to further provide at least one selective oxidizer at the recited location between the shift converter **20** and the fuel cell **50** in the apparatus of Wang et al., on the basis of suitability for the intended use and absent a showing of unexpected results thereof, because the provision of a selective oxidizer further decreases the carbon monoxide content of a reformed gas stream to a tolerable level for use by a fuel cell. The reduction in carbon monoxide minimizes the poisoning

of a fuel cell, which is desirable in cases where long life is an important criterion, as taught by Fanciullo (see column 1, lines 27-35).

3. Claims 18, 2, 5, 7 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeu (JP 62-283567) in view of Hirota (JP 59-213940), Applicant's Disclosed Prior Art, and Giles et al. (US 4,264,566).

Regarding claim 18, Takeu (FIG. 1; English Abstract; Translation) discloses a fuel cell system, comprising: a fuel processor (i.e., reformer **8**) for producing a reformed gas; a shift converter (i.e., a high temperature shift converter **9**) located downstream of the fuel processor **8**; a fuel cell **1** downstream of the shift converter **9**; a first conduit connecting the fuel processor **8** to the shift converter **9** for carrying the reformed gas to the shift converter; and a second conduit connecting the shift converter **9** with the fuel cell **1** for carrying the gas stream to the fuel cell.

Takeu further discloses a source of water in the form of steam **7**, and a means for feeding the water in a controlled manner (i.e., by manipulation of valves **13**, **14**, **15**, **16**) from the source **7** to at least one of the first and second conduits (i.e., via pipes **11** and **12**). (see also, translation page 5, line 10 to page 6, line 15, regarding manipulation of the valves).

Although Takeu discloses that the source of water comprises steam and not a liquid phase water, the recitation of a particular phase of water adds no further patentable weight to the apparatus claim, since expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim, *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969). Also, the inclusion of a material worked upon by a structure being claimed does not impart patentability to the claims, *In re Young*, 75 F.2d 966, 25 USPQ 69 (CCPA 1935); *In re Otto*, 312 F.2d 937, 136 USPQ 458, 459 (CCPA 1963).

In any event, it would have been obvious for one of ordinary skill in the art at the time the invention was made to substitute a source of liquid phase water for the steam in the apparatus of Takeu, on the basis of suitability for the intended use and absent a showing of unexpected results thereof, because the use of liquid phase water would have been considered conventional to one of ordinary skill in the art, as evidenced by Hirota (i.e., liquid phase water from tank **15** is fed to conduit **20b** located between fuel processor **1d** and shift converter **24**; see Figure and Abstract). Furthermore, the substitution of known equivalents merely involves routine skill in the art.

Takeu is silent as to the means for feeding water comprising the specifically claimed water feed control unit, where the control unit includes a sensor for sensing the temperature of the at least one of the reformed gas and gas stream, a valve for adjusting the flow rate of water into the at least one of the reformed gas and the gas stream, and a control unit for controlling the valve based upon temperature sensed by the sensor.

However, it is noted that Applicant's disclosure specifically states that, "Such control systems for sensing temperature of a gas stream and controlling a flow valve in response to the sensed temperature are well known in the art," (specification, page 5, lines 21-31; specifically, lines 29-31). Giles et al. (FIG. 2; column 5, line 35 to column 7, line 64) further evidences the conventionality of such control systems by teaching an apparatus comprising a sequence of catalyst beds **1-4** each connected by conduits **62**, **65**, **69**, wherein a cold feed gas is supplied to each of the conduits in a controlled manner. In particular, the apparatus comprises a feed control unit including a sensor for sensing the temperature of at least one of the effluent streams within the conduits (i.e., thermocouple, generating signals **121**, **131**, **141**); a valve **130**, **140**, **150** for adjusting the flow rate of feed gas into the at least one of the effluent streams, and a control unit

124, **134**, **144** for controlling the valve based upon the temperature sensed by the sensor.

It would have been obvious for one of ordinary skill in the art at the time the invention was made to provide the instantly claimed water feed control unit to the apparatus of Takeu, on the basis of suitability for the intended use and absent a showing of unexpected results thereof, because the claimed water feed control unit would have been considered well known in the art of controls, as stated within Applicant's disclosure. Furthermore, such a control system would enable a close control of the temperature within the apparatus, with minimal measurement time lag, as taught by Giles (see, e.g., column 2, lines 16-38).

Regarding claim 2, the modified apparatus of Takeu structurally meets the claim because the amount of water added and the particular oxygen/carbon ratio fed to the shift converter **9** are considered process limitations that add no further structure to the apparatus claim.

Regarding claim 5, Takeu is silent as to the apparatus further comprising means for collecting water from the fuel cell **1** and recycling at least a portion of the collected water to the water source **7**. In any event, it would have been obvious for one of ordinary skill in the art at the time the invention was made to provide means for collecting and recycling water from the fuel cell **1** to the water source **7** in the apparatus of Takeu, on the basis of suitability for the intended use thereof, because the Examiner takes Official Notice that it is well known in the art to collect and recycle unused reactants and products for subsequent use within the apparatus, for raw material conservation. This conventionally known concept is further evidenced by Hirota, who teaches a system comprising means for collecting and recycling water produced by a fuel cell **7** to a water source **15**, for subsequent use (see FIG. 3, 4).

Regarding claim 7, "solenoid valves" are not specifically disclosed. In any event, it

would have been obvious for one of ordinary skill in the art at the time the invention was made to select solenoid valves for the control valves in the modified apparatus of Takeu, on the basis of suitability for the intended use and absent a showing of unexpected results thereof, because the Examiner takes Official Notice that the use of solenoid valves as control valves is well known in the art.

Regarding claim 11, Takeu discloses that water is fed to both the first conduit and the second conduit, via lines **11** and **12** (see Figure 1).

4. Claims 6 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeu (JP 62-283567) in view of Hirota (JP 59-213940), Applicant's Disclosed Prior Art and Giles et al. (US 4,264,566), as applied to claim 18 above, and further in view of Fanciullo (US 4,046,956).

The same comments with respect to Takeu, Hirota, Applicant's Disclose Prior Art and Giles et al. apply. Takeu, however, is silent as to the apparatus further comprising at least one selective oxidizer, between the shift converter **9** and the fuel cell **1**, and located downstream of where the water feed control unit feeds water to the second conduit means. Fanciullo (FIG. 1) teaches a fuel cell system comprising a fuel processor (i.e., reformer **17**), a shift converter **28** and a fuel cell **10**. Fanciullo further teaches at least one selective oxidizer **32**, provided between the shift converter **28** and the fuel cell **10**. In the "Description of the Prior Art", Fanciullo evidences that the above stated elements as well as their particular arrangement is conventional to fuel cell systems (see column 1, lines 10-35). It would have been obvious for one of ordinary skill in the art at the time the invention was made to further provide at least one selective oxidizer at the recited location between the shift converter **9** and the fuel cell **1** in the modified apparatus of

Takeu, on the basis of suitability for the intended use and absent a showing of unexpected results thereof, because the provision of a selective oxidizer further decreases the carbon monoxide content of a reformed gas stream to a tolerable level for use by a fuel cell. The reduction in carbon monoxide minimizes the poisoning of a fuel cell, which is desirable in cases where long life is an important criterion, as taught by Fanciullo (see column 1, lines 27-35).

5. Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeu (JP 62-283567) in view of Hirota (JP 59-213940), Applicant's Disclosed Prior Art and Giles et al. (US 4,264,566), as applied to claim 18 above, and further in view of Fleischli et al. (US 5,380,088).

Takeu is silent as to the water feed control unit comprising a mixer device with means to atomize water, or a packing of high surface area material, wherein the material is selected from the group consisting of ceramic pellets, steel wool, reticulated ceramic foam, metal foam, and honeycomb monoliths. Fleischli et al. (FIG. 1) teaches a mixing device comprising means to atomize water (i.e., an injection system **3**), and a packing of high surface area material (i.e., static mixing unit **4**), wherein the material is selected from the group consisting of ceramic pellets, steel wool, reticulated ceramic foam, metal foam, and honeycomb monoliths (e.g., a honeycomb monolith, defined by corrugated layers **11**; see FIG. 2). It would have been obvious for one of ordinary skill in the art at the time the invention was made to provide the mixer device of Fleischli in the modified apparatus of Takeu, on the basis of suitability for the intended use and absent a showing of unexpected results thereof, because the mixer of Fleischli et al. is a simple device that provides intimate mixing over the entire cross section of a channel, and over short sections, while maintaining a small pressure drop (see column 2, lines 38-46).

Response to Arguments

6. Applicant's arguments filed January 22, 2008 have been fully considered but they are not persuasive. Applicant (beginning on page 5, in the fifth paragraph) argues,

> "… the Examiner does not at all address the second part of claim 6 dealing with the selective oxidizer, that is, that the selective oxidizer is also located downstream of where the water injection means injects water into the second conduit. In not even addressing this limitation, the Examiner has failed to make a prima facie case for obviousness of this claim. Furthermore, it is submitted that it would not at all be obvious to place the selective oxidizer where located according to the present application, as the location in the present application serves the stated purpose of the invention as recited in the specification, while no such purpose or motive for such placement is stated in either Wang et al. or Fanciullo. The present specification teaches that this placement of the selective oxidizer is so that any remaining carbon monoxide in the gas stream can be further reduced prior to feeding the gas stream to the fuel cell. If not fed downstream of the water injection point, then reduction would not be as likely to occur as is taught and desired in accord with the present invention. Since this location is for a specific purpose, and it is not at all taught or suggested by any of the art of record, it is submitted that claim 6 is allowable over the art of record, and early and favorable action is requested."

The Examiner respectfully disagrees. Fanciullo (FIG. 1) teaches a fuel cell system comprising a fuel processor (i.e., reformer **17**), a shift converter **28** and a fuel cell **10**. Fanciullo further teaches at least one selective oxidizer **32**, provided between the shift converter **28** and the fuel cell **10**. In the "Description of the Prior Art", Fanciullo further teaches that the above stated elements, as well as their particular arrangement of a shift converter downstream from a fuel processor, and a selective oxidizer downstream from the shift converter, are conventionally employed in fuel cell systems, to reduce the carbon monoxide content of the reformed gas stream to a tolerable level for processing in the fuel cell (see column 1, lines 10-35).

Looking now to Figures 1, 2 and 5 of Wang et al., the system comprises a fuel processor (i.e., reformer **10**), a shift conversion zone comprising a high temperature shift converter **20** and a low temperature shift converter **22**, and a fuel cell **50** to which the hydrogen containing stream is ultimately fed. One having ordinary skill in the art, being equipped with the teachings of Fanciullo, would have understood to position the selective oxidizer downstream from the shift conversion zone— i.e., at a location downstream from the final, low temperature shift converter **22**— and upstream of the fuel cell **50**, in order to further decrease the carbon monoxide content of the reformed gas stream. Because the water injection points (from sources **200**) are located immediately upstream of the high temperature shift converter **20** and immediately upstream of the low temperature shift converter **22**, it then follows that the selective oxidizer would be located downstream from the water injection points in the modified apparatus of Wang et al.

Applicant (beginning on page 6, second paragraph) further argues,

> "Turning to claim 18, this claim calls for the water injection means to inject liquid phase water. The Examiner concedes that Takeu (the primary reference used to reject claim 18) does not at all disclose this subject matter. Instead, Takeu discloses a very different injection of steam, or vapor phase water. This is critically different in that the water is much more effective to cool when it is introduced in liquid phase. It is submitted that this claim limitation is in fact properly given weight in the present claim, and further that there are surprising results in using liquid phase water. The teaching of liquid phase water in other prior art patents which have been used as secondary prior art should not be seen as evidence that a person of skill in the art would make such a modification."

The Examiner respectfully disagrees. Although Takeu discloses that the source of water comprises steam and not a liquid phase water, the Examiner maintains that the recitation of a particular phase of water adds no further patentable weight to the apparatus claim, since

expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim, *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969). Also, the inclusion of a material worked upon by a structure being claimed does not impart patentability to the claims, *In re Young*, 75 F.2d 966, 25 USPQ 69 (CCPA 1935); *In re Otto*, 312 F.2d 937, 136 USPQ 458, 459 (CCPA 1963).

Even if patentable weight were given to a specific phase of water, the Examiner maintains that it would have been obvious for one of ordinary skill in the art at the time the invention was made to substitute a source of liquid phase water for the steam in the apparatus of Takeu, on the basis of suitability for the intended use and absent a showing of unexpected results thereof, because the use of liquid phase water for the reducing the carbon monoxide content in a reformed gas stream would have been considered conventional to one of ordinary skill in the art, as evidenced by Hirota (i.e., liquid phase water from tank **15** is fed to conduit **20b** located between fuel processor **1d** and shift converter **24**; see Figure and Abstract).

One having ordinary skill in the art would have expected liquid water to exhibit a greater cooling effect than steam, due to the effect of the phase change heat of vaporization. (see, e.g., Wang et al., column 4, line 65 to column 5, line 34). The more effective cooling would not be considered a "surprising result", because water (at atmospheric pressure) is inherently a liquid at about 0 °C to 100 °C and a vapor/steam at greater than about 100 °C. Predictably, water admitted to the conduits at a temperature from about 0 °C to 100 °C will cool the reformed gas stream more effectively than water admitted to the conduits at temperatures greater than about 100 °C.

Applicant (beginning on page 6, last paragraph) further argues,

> "As to the control, this feature too supports patentability. With Takeo being silent, the Examiner turns to Applicant's "Admitted Prior Art", which teaches that such control

> systems themselves are known in the art. The use of such control systems in the present invention is not at all disclosed or suggested by Applicant's APA or any other art of record, and claim 18 should be allowed."

The Examiner respectfully disagrees. Please note that Takeo does suggest some form of a control system for manipulating the valves **13**, **14**, **15**, **16**, to control the flow of steam from the source **7** to at least one of the first and second conduits **11** and **12**. As stated in the Takeo Abstract, a temperature transmitter may be used to detect the temperature rise, and a control valve **13** and automatic breaker valves **15** and **16** may be opened by the direction from a control computer. See also, translation page 5, line 10 to page 6, line 15, regarding the manipulation of the valves **13**, **14**, **15**, **16** based on a sensed temperature. Takeo, however, does not appear to teach the instantly claimed water feed control unit, including the claimed temperature sensor configuration (i.e., sensors located in the conduits so that the temperature of the at least one of the reformed gas and gas stream is detected), since the temperature sensor configuration is not shown in the figure or adequately described in the translation.

Applicant, however, has indicated that, "[s]uch control systems for sensing temperature of a gas stream and controlling a flow valve in response to the sensed temperature are well known in the art." (see specification, page 5, lines 21-31; specifically, lines 29-31). In addition, the Examiner cited Giles to further evidence the conventionality of such a control system, and to provide the motivation for employing such a control system in the apparatus of Takeo. Giles et al. (FIG. 2; column 5, line 35 to column 7, line 64) taught an apparatus comprising a sequence of catalyst beds **1-4** each connected by conduits **62**, **65**, **69**, wherein a cold feed gas is supplied to each of the conduits in a controlled manner. In particular, the apparatus comprises a feed control unit including a sensor for sensing the temperature of at least one of the effluent streams within

the conduits (i.e., thermocouple, generating signals **121**, **131**, **141**); a valve **130**, **140**, **150** for adjusting the flow rate of feed gas into the at least one of the effluent streams, and a control unit **124**, **134**, **144** for controlling the valve based upon the temperature sensed by the sensor. One having ordinary skill in the art would have been motivated to provide the claimed water feed control unit in the apparatus of Takeu, since such a control system would have enabled a close control of the temperature within the apparatus, with minimal measurement time lag, as taught by Giles (see, e.g., column 2, lines 16-38).

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

* * *

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JENNIFER A. LEUNG whose telephone number is (571)272-1449. The examiner can normally be reached on 9:30 am - 5:30 pm Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn A. Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jennifer A. Leung/
Primary Examiner, Art Unit 1797